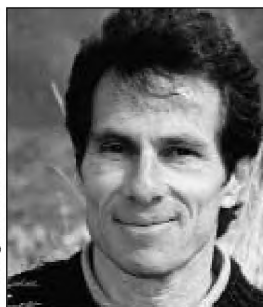


Disaster Recovery in the Artifact Fields – Mississippi After Hurricane Katrina



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Introduction

From 22-29 September 2005 HEART – one of eight Heritage Emergency Assistance Recovery Teams – arrived in Mississippi to assess collection damage to cultural institutions following Hurricane Katrina. Organized jointly by the American Association for State and Local History (AASLH) and the American Institute for Conservation (AIC), this is a summary of the first Mississippi HEART team's activities.

The Storm

Having crossed from the Atlantic Ocean to the Gulf of Mexico via South Florida, Hurricane Katrina, packing 140 MPH winds, made landfall in Plaquemines Parish in Southern Louisiana on Monday 29 August 2005 (6:10 AM CDT) as a strong Category 4 hurricane on the Saffir-Simpson scale. Four hours later (10:00 AM CDT), the hurricane, downgraded to a Category 3, touched land again near the Louisiana-Mississippi border sustaining diminished winds of 125 MPH. The storm surge, forced ashore as the storm's swirling winds met the shallow slope of Mississippi's continental shelf, exceeded 25 feet in some locations according to locals, exceeding Hurricane Camille's 1969 surge by five to 10 feet or more¹.

Heading northeasterly, Katrina's wind speed dropped to 100 MPH and hit the small town of Laurel, Mississippi one hundred miles from the Gulf of Mexico, uprooting huge trees that split homes

asunder as though hit by an ax. As hurricanes go, these statistics are not exceptional. Their consequences, however proved monumental. The U.S. National Oceanographic and Atmospheric Administration (NOAA) ranks Katrina "one of the strongest storms to impact the coast of the United States during the last 100 years," with a barometric pressure dropping to 27.11 inches.

Further, a preliminary report from NOAA summarizes Hurricane Katrina as "the most costly natural disaster to strike the United States ever and the deadliest since the Lake Okeechobee disaster (hurricane) of September, 1928. As of September 26, the death toll stood at 1,075 and damage estimates were in excess of \$100 billion."²

Televised images depicted communities in ruin, refugees homeless, and a stunned population wading waste-deep in flood waters in sodden New Orleans. In the wake of the storm, communication concerning the state of heritage collections was fragmentary. With little factual information to go on, the AASLH initiated a plan to organize two mobile units to assess conditions in the collecting institutions of Louisiana and Mississippi. This assessment program was funded by the generous support of the Watson-Brown Foundation of Thomson, GA and the History Channel. Each team was led by a museum professional and staffed with conservators vetted by the AIC, with four one-week rotations planned per state. The following is a record of the experiences of the first team's visit to Mississippi including observations related to disaster recovery protocols.

1 Axel Graumann et. al., "Hurricane Katrina, a climatological perspective: preliminary report," National Oceanographic and Atmospheric Administration National Climatic Data Center, Technical Report 2005-01, October 2005, <<http://lwf.ncdc.noaa.gov/oa/reports/tech-report-200501z.pdf>> (7 November 2005).

2 Graumann et. al., "Hurricane Katrina."

HEART

The first Mississippi HEART assessment team included Joy Barnett (Administrative Assistant, Texas Association of Museums), her son Ashley Barnett (Fire and Rescue, Burnet, TX), Gary Frost (Library Conservator, University of Iowa), and Randy Silverman (Preservation Librarian, University of Utah). Arriving in Jackson, Mississippi, we were greeted by unseasonably hot and muggy weather. Home from 22-29 September was a small, rented recreational vehicle (RV) stocked with food, water, and bedding by Joy and Ashley and used by all for sleeping, cooking, and personal hygiene. A car was also rented to increase the team's mobility and responsiveness.

The Old Capitol Museum

The first stop on Thursday and Friday (22-23 September) was at the Mississippi Department of Archives and History (the second oldest such department in the United States). Julia Marks Young (Archives and Library Director) and Cindy Gardner (Old Capitol Museum of Mississippi History, Field Services Curator) shared what was known locally about conditions inside the state's collecting institutions. The Old Capitol Museum itself is housed in the state's historic capitol building (listed on the register of National Historic Landmarks), which had been damaged by the storm. Approximately one-third of the Old Capitol's copper roof had been blown off the south end of the building, exposing the historic Senate Chamber and the Museum's collection storage to the hurricane's driving rain mixed with insulation, wet plaster and other building constituents.

Faced with wet collections and a leaking roof, the museum's staff rapidly and safely relocated 3,000 threatened collection objects. Affected materials were laid out to air dry on polyethylene sheeting spread on floors and over tabletops throughout the building, and included paintings, furniture, textiles, Choctaw baskets, swords, guns, and works of art on paper. As a result of the Museum staff's familiarity with the institutional disaster plan, serious damage was restricted to approximately 100 objects. When we arrived, a previously rolled, mural-sized oil painting lay unfurled on the polished stone floor, its image of Union soldiers rushing into battle under an upraised American flag flaking off the canvas. Textile conservator Jessica Hack, who had been touring



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Water-damaged mural, oil painting on canvas, Old Capitol Museum, Jackson, Mississippi: 23 September 2005

crisis-stricken institutions since the storm's visit was also on site; the fate of her own studio in New Orleans still unknown to her.

The assessment team helped the Museum draft a Letter of Inquiry to the National Endowment for the Humanities (NEH) in hopes of securing a \$30,000 grant directed at object-level conservation treatment, and to develop adequate housings to protect collections during their move to temporary quarters while a new museum building is constructed. Repairs to the historic Old Capitol will be undertaken independently.

Following this assessment, we drove southeast to Laurel late Friday where the team was asked by representatives of the Federal Emergency Management Agency (FEMA), to remain inland until a second hurricane, Rita, made landfall Saturday. The possibility of Rita swinging toward Mississippi remained a viable threat that slowed our progress slightly until the storm came ashore near Sabine Pass, Texas. Receiving clearance to stay the night in a mall parking lot, we were told a neighboring area looked like a bomb hit it, which we confirmed early the following morning.

Laurel-Jones County Library

We visited the Laurel-Jones County Library Saturday, 24 September to address a reported mold outbreak.

The modern, two-story concrete block library's genealogy collection was housed in a small, second-floor room where high humidity and a lack of airflow were palpable despite several operating floor fans. Synthetic, wood-grained wall paneling, a gypsum drop-tile ceiling, and baked enamel library shelving left little within the room to absorb ambient Mississippi moisture except the collection itself. Mold was blooming randomly on newer, buckram bindings, many of which also exhibited a white, waxy spue indicating the problem was not new. The team provided written recommendations for discontinuing weekend shutdowns of the heating, ventilating, and air conditioning (HVAC) system, especially during the humid summer and fall months. We also suggested ways to safely removing active mold and spue from buckram bindings using simple rubbing alcohol and white vinyl erasers.

This relatively minor problem was only nominally related to the hurricane, so, with low-flying clouds racing ahead of Rita's rain bands we pushed further South to overnight in Hattiesburg. Here we visited University of Southern Mississippi Library and were assured all was well with the local libraries and museums. Not far from campus, however, we found a cemetery with huge oak trees pulled up by the roots and splintered trunks resting on the tombstones.

Using his influence with professional colleagues, Ashley secured permission for us to camp that night in the parking lot of Fire House #1. The drone of the RV's generator and air conditioner cut through the quiet of rural Hattiesburg and made sleep difficult. By morning



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Fallen oak tree in a cemetery, Hattiesburg, Mississippi: 24 September 2005

the bug-spattered windshield was obscured by condensation bearing witness to the unseasonably high temperature and relative humidity (85°F / 85% RH).

Televised news reports received early Sunday morning (25 September) on our portable TV documented Rita's landfall in Texas. Other than a few tornado warnings for counties north of us, the weather was surprisingly placid, so we headed south to Biloxi and the Gulf Coast. Increasingly, broken trees, stripped or toppled billboards, and ruined buildings accompanied us throughout the 75-mile drive, and grew more pronounced as we approached the coastline. Approximately six-miles from the Gulf, evidence of the storm surge greeted us. Debris was deposited on the shoulder of the raised roadbed as we reached Interstate 10; plastic bags, shredded fabric, and multicolored household goods were strewn in the tree limbs 12 feet from the ground revealing the high-water mark's crest.

Maritime and Seafood Industry Museum

Every disaster is unique; even in the aftermath of a regional catastrophe like Katrina each institution we



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Façade and building damage, Maritime and Seafood Industry Museum, Biloxi, Mississippi: 25 September 2005

visited posed fundamentally different problems. The Maritime and Seafood Industry Museum proved difficult to locate, as the city of Biloxi was trashed beyond recognition. Street signs were mostly down, buildings were in ruins, and the edge of every road was piled high with discarded wreckage. Heaps of broken boards, bricks, insulation and other building materials mixed with furniture, TVs, clothing, and picture frames were sobering reminders that the material possessions of thousands of people had been reduced to roadside litter in a matter of hours. Some houses were simply flattened, with three or four front

steps still standing before a vacant foundation. Restaurants, gas stations, and hotels had been shoved off their foundations or were missing windows, roofs, or outer walls. The hulls and superstructures of Biloxi's huge offshore gambling casinos, picked up and hurled shoreward by the storm surge, set like beached whales, their steel hulls punctured from collisions with buildings, the walls ripped open to expose slot machines and chandeliers.

Passing through a military checkpoint, we finally located the Maritime and Seafood Industry Museum on the waterfront facing the destroyed US 90 bridge that once spanned Biloxi Bay. Now, each section of bridge leaned against its piling with one end submerged in saltwater and the other pointing skyward like a concrete domino. The Museum had experienced catastrophic damage. Only the facade of the 1934 National Register building, a portion of roof, and a section of the second story remained standing. Trees had been driven torpedo-like through the outer walls by a 26-foot storm surge; collapsed brick and mortar were strewn across the grounds. Two of the Museum's historical fishing boats, evacuated upriver to the head of Biloxi Bay, sustained above-deck damage. Another was located and recovered from the middle of a pile of rubble half-a-mile away. Others remained unrecovered while the bulk of the Museum's collection was scattered in a several-block radius in what was termed the 'artifact field', now exposed to outdoor weather conditions or were buried under the Museum's collapsed slab roof.

Behind the Museum, sitting among bits of concrete and twisted steel were dramatically juxtaposed treasures: a painted porcelain pitcher, dozens of phonograph albums, an early marine engine. These provided evidence of the collection's strengths relating to the Mississippi Gulf Coast's seafood



Ceramics in the artifact fields, Maritime and Seafood Industry Museum, Biloxi, Mississippi: 25 September 2005

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industry, early indigenous inhabitants of the region, the first French settlers, and, quixotically, artifacts relating to Hurricane Camille (1969, a Category 5 storm). Camille had previously been the single-most damaging storm to hit the Gulf Coast, and the standard people used to prepare for hurricanes.

Missing were the extensive photographic and map collections; Native American pottery and tools; historical gifts from the heirs of Pierre LeMoyne Sieur d'Iberville relating to his discovery of Biloxi and the mouth of the Mississippi River in 1699; fittings from nineteenth-century Biloxi schooners, oyster dredges and winches, charcoal deck stoves, ice chippers, bilge pumps, mast hoops, and hand-fabricated oyster baskets; an original Biloxi-built catboat, a nineteenth century New Orleans dory, a Biloxi skiffcat, and a cross-section of a 40-foot Biloxi oyster schooner taken amidship. As a small compensation, most of the Ship Island Lighthouse's Fresnel lens – a dazzling array of glass prisms and bull's-eye lens fabricated in Paris in 1826 – now shattered, had been recovered.



Ashley Barnett sitting on a tree that bettered the Maritime and Seafood Industry Museum, Biloxi, Mississippi: 25 September 2005

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Rusty, Maritime Director Robin Krohn David's husband, described an incident that occurred during the storm involving an elderly neighbor. Rusty and Robin's house sits on higher ground than most of their neighbors and only flooded about one foot, while others were submerged in three or four feet of water. Deciding to check on Lucy, who had lived alone since her husband's death, Rusty arrived to discover a foot of water inside her house but four feet of water outside.

He knew he had to get her out. Breaking down the door and staying ahead of the rushing water, Rusty ran upstairs and found Lucy crouched at the top of the stairwell. Afraid the roof or the stairs would collapse from their weight or the pressure of the rising water, Rusty tried to persuade Lucy to return with him to his

house, but she wouldn't budge. Dressed only in a white housecoat, she explained, "Oh, I just don't want you to see me like this!" Rusty persevered, and carried her to safety, her modesty intact. Only when safely home and sheltered from the screaming wind did he realized how dangerously close they had come to being killed. Rusty's story typified many others we would hear.

Beauvoir, Jefferson Davis' Home and Presidential Library

Further down Beach Boulevard through another military checkpoint we reached Beauvoir, the Jefferson



Beauvoir, Jefferson Davis' home, missing its wrap-around porch, Biloxi, Mississippi: 25 September 2005

Davis Home and Presidential Library, situated 500 feet from the Gulf of Mexico. The raised cottage-style residence, constructed between 1848-1851, has weathered 22 previous hurricanes. Its brick pilings are high enough that even Katrina's tidal surge couldn't topple the structure, restricting damage to the wrap-around porches (missing except in the back), the roof (now patched with a tarp), and several front windows that had admitted water to the front rooms.



Richard R. Flowers, Beauvoir Library Collections Curator, inside the Presidential Library at Beauvoir, Biloxi, Mississippi: 25 September 2005

Two contemporary cottages that had flanked the home were leveled: the Library Pavilion, where Davis wrote his books ("The rise and fall of the Confederate government" [1881] and, "A short history of the Confederate States of America" [1890]), and the Hayes Pavilion, named for Davis' oldest daughter, Margaret, and used by her family when they came to visit. The Confederate Veterans Home Hospital, built with triple-thick brick walls in 1924, and Director Patrick Hotard's nearby home were also razed by the storm. The new Jefferson Davis Presidential Library, dedicated in 1998, sustained major damage to the first floor. The storm surge swept the collection through the Museum's shattered walls and windows and scattered artifacts well beyond the property's 52-acres. Adding a farcical twist to the tragic scene, an antique piano remained suspended high in a tree adjacent to a Confederate flag, both caught on the same branch where the storm surge had left them.

Four days before our visit, wet historic furniture and movable artwork from Davis' home had been removed for storage in environmentally-controlled conditions to the State Archives in Jackson, a benefaction of an independent assessment team made up of Debbie Hess Norris (Heritage Preservation), Richard Pearce-Moses (Society of American Archivists), and David Carmichael (Council of State Archivists). Rare books and manuscripts, remaining in good condition in the second floor Library above the high water mark, were relocated to the McCain Library at the University of Southern Mississippi in Hattisburg the day of our arrival.

Secluded at the back of the second floor and remaining exceedingly hot and humid, the Library's remaining archives collection was producing minimal mold growth



Antique piano and confederate flag in a tree, Beauvoir, Biloxi, Mississippi: 25 September 2005



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Air drying books inside the Presidential Library, Beauvoir, Biloxi, Mississippi: 25 September 2005

due to the constant scour of Gulf breezes passing through the building. Nearly four weeks following the storm we were still able to open up wet books and documents and successfully spread them out to dry with little sign of damage. Additional localized airflow was stimulated by small fans powered by a National Guard generator situated behind the building. Jack D. Elliott, Jr. (Historical Archaeologist, Historic Preservation Division, Mississippi Department of Archives and History) was onsite consulting and assisting with artifact recovery. In a moment of levity he noted this was his chance to "dig up the same artifacts for the second time."

The assessment team drafted Letters of Inquiry to NEH for emergency funding for both the Maritime and Seafood Industry Museum and Beauvoir to enable them to hire a temporary workforce capable of excavating, packing, and cataloging scattered artifacts to stabilize collections. Leaving town ahead of the military curfew, the team returned to Hattiesburg's Fire House #1 for another overnight's stay.



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Rusted swords recovered in the artifact field, Beauvoir, Biloxi, Mississippi: 25 September 2005

Old Spanish Fort Museum

The following morning (Monday, 26 September) we headed southeast to Pascagoula to assess the Old Spanish Fort Museum. This one-room local museum had been inundated by approximately two feet of water, but the building had not been opened up since the storm. An oozy layer of mud covered the museum's floor and standing water remained inside ceramic pitchers and iron kettles, marking the flood's highwater mark. The surfaces of many organic objects such as leather bookbindings, cotton carpetbags, and a leather saddle were coated with five or six varieties of thickly conjoined fungi forming a fuzzy mosaic in rusty red, olive brown, ocher, raw sienna, and black.

The tiny building included two doors and six double-hung windows that, with considerable effort, were opened to create a bit of cross-ventilation despite the swollen wooden frames. Far greater microorganism growth was observed inside closed exhibit cases; wearing respirators and nitrile gloves, we opened the glass doors and moved organic materials to staging areas to air dry. A small card catalog discovered within a closed metal box was opened up and the cards staggered to encourage drying.



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Molded saddle, Old Spanish Fort Museum, Pascagoula, Mississippi: 26 September 2005

At the Old Spanish Fort Museum, the excessive mold bloom was nurtured by a lack of air movement exacerbated by windows that remained sealed weeks after the storm. While institutional security remained a concern, collection artifacts invariably needed outside air or they suffered badly.

We came to realize that nineteenth century storm shutters afforded greater utility than twenty-first century plywood board-ups. Hinged at the top, the



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Molded cloth bag inside the Old Spanish Fort Museum, Pascagoula, Mississippi: 26 September 2005

older design could be closed quickly for protection in response to inclement weather, and readily reopened as weather conditions changed.

Jackson County Records Office

We briefly visited the Jackson County Records Office, now removed to temporary quarters at the county fairgrounds. Terry Miller (Chancery Clerk) had been talking with Randy by phone since a week following the storm, but the team was unclear if Miller had yet received clearance from his county board to remove the water-damaged record books from the still-flooded basement. Onsite in Pascagoula we discovered he had finally received clearance to move the books. They had been packed out and frozen by Belfor USA (Fort Worth, TX) and were slated to be vacuum freeze dried soon. Moving on, the team headed west to Ocean Springs, the town once connected to Biloxi by the Bay Bridge but now separated pending the completion of a proposed \$150 million replacement in 2007.

Walter Anderson Museum of Art

In Ocean Springs, the Walter Anderson Museum of Art was undamaged, but the Anderson family estate – which held most of the artwork – was ravaged. Shearwater, the 24-acre Anderson complex of family houses, a pottery, block printing facility, showroom, and collection vault facing the Mississippi Sound lost 15 of its 17 buildings.

The vault containing Walter Anderson's personal writings, paintings, photographs and linoleum blocks withstood the force of the hurricane but sadly admitted storm flood water. Acting quickly, the oil paintings, watercolors, and sketches were moved to the Walter Anderson Museum where they were spread out to air dry. Representing a private collection, John G. Anderson, son of the artist, is ineligible to receive NEH emergency funds, but volunteers flocked to the collection's rescue and were laboring, even as we watched, to sort out things and assess damage in anticipation of a future conservation initiative. Margaret Moreland, the Anderson's long-time paper conservator from Baton Rouge, LA had reviewed the tide lines, water-soluble pigments, and mud deposits, and was researching salt water's effect on the media before proceeding. We could only marvel at the tenacity of the Anderson family who had just lost homes and businesses and were still dedicating all their efforts to preserving what is unquestionably the legacy of an American master.



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Molded family Bible, Old Spanish Fort Museum, Pascagoula, Mississippi: 26 September 2005



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Mud-coated painting, Walter Anderson Museum of Art, Ocean Springs Mississippi: 26 September 2005

Biloxi Public Library

After dining on hotdogs and dark mustard and sleeping overnight in a local Wal-Mart parking lot, the team returned to Biloxi (circumventing the downed Bay Bridge) to visit the Biloxi Public Library. Inside the modern concrete and glass library situated one block from the Gulf, our guide, Jamie Bounds Ellis (Local History and Genealogy Librarian), cautioned us to keep a sharp lookout for snakes. A couple of windows, staved in during the storm surge and now boarded up, had admitted six to eight inches of pine needles, leaves, and other botanic flotsam, carpeting the first



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Gary Frost and librarian Jamie Bounds Ellis inside the Biloxi Public Library, Biloxi, Mississippi: 27 September 2005

floor. The snakes (rumored to be water moccasins) proved impossible to spot, but the interior space was surreal: the soft layer of brown pine needles transformed the soggy carpet into an indoor primordial jungle reminiscent of Maurice Sendak's "Where the Wild Things Are."

This institution provided us with clear insights into mechanisms that stimulate or suppress mold growth in real-world disaster situations. Tellingly, after four weeks of sitting in this hot, humid storehouse, the library stacks remained relatively mold free. The two-story ceiling throughout most of the building created a huge body of air that seemed to 'breathe' slightly, similar to a cave, in part due to boarded-up windows that leaked slightly but especially because the front and side doors were open during the day. Conversely, this library's local history collection, tucked inside a very confined room with only one door and little air movement, fostered active mold growth.

It became clear that Tyvek envelopes used for enclosing single rare pamphlets nurtured mold by trapping moisture between the Tyvek and the object.

Similarly, closed glass exhibit cases, glazed, wall-mounted pictures, and closed map drawers produced humid micro-environments that fostered mold spore germination. By contrast, paper envelopes stored in the same box wicked water away from the artifacts, thereby minimizing mold growth. Water-soaked material spread out to dry on polyethylene-covered work surfaces also trapped moisture between the plastic and the object, producing mold or, in the case of some metal objects, rust. Inserting newspaper or craft paper between the polyethylene and the wet object helped stimulate evaporation, thereby improving drying.

After weeks of negotiations, Head Librarian Charline (Charlie) Longino convinced the city council to support her need to stabilize the collection. She contracted with Munters (Chicago, IL), who arrived that morning to begin the packout. Tom McGuire (Catastrophe Operations Manager) described the scope of work, which addressed both the local history and Circulating Collections. Packed onto freezer trucks, the material would travel to Chicago for vacuum freeze drying and sterilization using gamma radiation. The assessment team drafted a Letter of Inquiry to NEH for emergency funding for post-drying treatment for the local history collection including removal of dead mold following sterilization. We then moved on.

Gulfport-Harrison County Public Library

Driving west through another military checkpoint, the team next searched for the Gulfport Public Library. Advancing closer to the storm's point of landfall, the degree of damage to roads and buildings increased. Lacking any outward identification other than a few shelves of books visible through a broken upstairs window - its granite sign flattened by the storm surge - we entered the Gulfport Public Library.

The floor-to-ceiling windows, originally situated between olive-grey tile-covered concrete columns, were missing on all sides, making ground level entry simple. Inside on the first floor, structural columns were the only things standing. Wallboard, doors, room dividers, shelving, furniture, books, and everything else had been swept away leaving only smooth tiles on half the floor and beach sand mixed with bits of concrete on the other.

A spiral staircase leading to the second floor revealed a completely different scene. Neatly shelved books, four computer terminals mounted above four over-wide wooden chairs, and a bottle of water sitting beside an upright Styrofoam cup on a round table created an eerie still-life. Lacking any evidence that historically significant material was in harm's way, and unable to locate any library personnel, we moved on.



Pine needles and boarded-up windows inside the Biloxi Public library, Biloxi, Mississippi: 27 September 2005



Molded record books, Biloxi Public Library, Biloxi, Mississippi: 27 September 2005

Hancock County Historical Society and County Courthouse

Circling inland to by-pass another downed bridge, we arrived in Bay St. Louis. Damage to the community infrastructure was severe. Large numbers of homes and small businesses were reduced to rubble. Dozens of cars were overturned, abandoned in the ditch running parallel to Highway 43. Fortunately, the Hancock County Historical Society, based in a small-wood-frame house two blocks from the beach, showed little sign of damage, and was now in the capable hands of three National Guard members who had just repaired the roof. The collection appeared to be in relatively good shape. Although the building received some flooding, the collection had been raised off the floor and, as a result of positive airflow, only two items showed signs of mold.

Adjacent to the Historical Society, the Hancock County Courthouse, a classical revival government building, had also sustained minimal damage and the few wet courthouse record books were air drying.

We spent that evening near the end of a deserted road overlooking the Gulf of Mexico. Dinner consisted of beer and beef stroganoff over rice shared while sitting on a white sand beach. The water was glassy, the air calm, and it was peaceful watching a pelican dive for fish as the sun set rose-pink against the clear pastel-blue sky. Remembering that only four weeks earlier Katrina's eye had come ashore exactly where we were sitting conjured up the specter of a 35-foot storm surge on our balmy beach, an almost impossible reality to digest.

University of Southern Mississippi, Gulfport Campus

On Wednesday, 28 September, our final day in the field, we visited the University of Southern Mississippi, Gulfport Campus in Long Beach. En route we were required to go through another military checkpoint at a railroad crossing. This time, double spools of razor wire lay parallel to the track in both directions and terminated at the guardhouse crossing. The library itself was a beautiful, new two-story structure that received about a foot of standing water on the main floor. Stacked in the front yard were large piles of insulation. Inside, contractors were ripping out now-moldy wallboard up to the four-foot level.

The University's microfiche and its small Heritage Library collections had molded. Fearing the rest of the collection would be contaminated if the two were mixed, they were left as they were, in effect, quarantined. In general we noticed this inappropriate 'germ theory' of mold propagation applied where mold had prospered due to the inappropriate fear that air circulation would spread the bloom.

In fact, the opposite approach was needed and we



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Mold damage inside a map drawer, Biloxi Public Library, Biloxi, Mississippi: 27 September 2005



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Tyvek envelope exacerbating mold damage, Biloxi Public Library, Biloxi, MS, 27 September 2005

looked for ways to encourage ventilation to help dry moldy material. We also demonstrated that handling moldy books while wearing respirators and disposable gloves was a safe protocol.

We connected small fans to the working power source on the second floor to generate air movement. We then laid down a brown craft paper work surface on an available Formica counter, opened books up to encourage evaporation, aired out microfilm cabinets, and removed craft paper backings from hanging pictures to promote air circulation. Finally, we discussed with staff the removal of dried mold residue using High Efficiency Particle (HEPA) filtered vacuums once the bloom had become dormant.

Pass Christian

We continued to travel west along the damaged beach road (Highway 90) discovering most structures for a quarter of a mile inland from the Gulf were simply gone. The few surviving houses were mansion-style homes built on a lone rise approximately eight feet above sea level, but many of these structures had



Second floor interior, Gulfport-Harrison County Public Library, Gulfport Mississippi: 27 September 2005

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First floor interior, Gulfport-Harrison County Public Library, Gulfport Mississippi: 27 September 2005

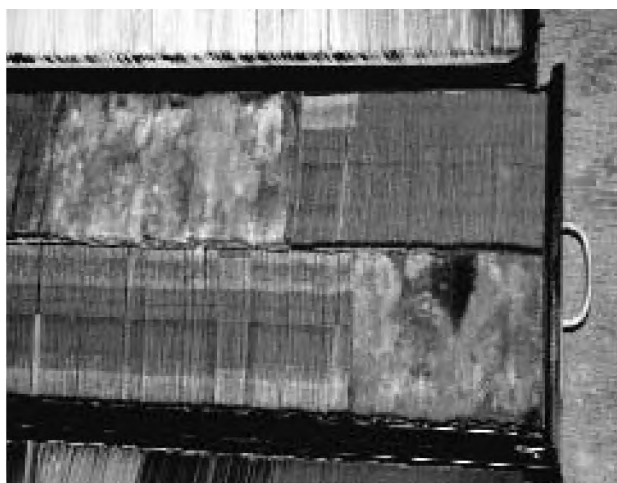
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been shifted from their foundations. Often, all that remained was the ubiquitous set of stairs leading upwards to a missing domicile. And everywhere jetsam remained suspended in the trees like low-lying fog. Southern pines were snapped off about 10 feet above the underbrush. Pine needle forests were turning the color of rust.

In Pass Christian, buildings were in shambles. Splintered lumber and other detritus were piled seven or eight feet high along the roadside. The scene was very disturbing. Sinks, refrigerators and cars were scattered like toys amid the junk piled next to the road. The scene was bleak and broken. We couldn't locate the Public Library. Reluctantly, we turned around and headed back towards Jackson.

A National Safety Net for Collections

Dealing with collections offered little reprieve from experiencing the effects of human tragedy. Mississippi's local population was in crisis. People had died, both immediately and as a result of interrupted critical care services. Many residents had lost their homes, belongings, and employment. Many stood in long lines near Red Cross tents seeking water and food rations. It was disheartening to see the social and cultural infrastructure so wounded. We were pleased to have had the chance to help out a little, but we left knowing much more needs to be done, immediately and in the future. All four Letters of Inquiry advanced for submission to NEH by the HEART Mississippi team were funded. It would be wonderful if other charitable organizations followed their lead, because much more is needed.



Molded microfiche, University Southern Mississippi Gulf Coast Campus, Long Beach, Mississippi: 28 September 2005

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Katrina's aftermath underscores for us the national need for a robust emergency response plan to deal with the salvage of cultural materials. Our visit came almost four weeks following the storm. Surely we could have been more effective had we arrived on the scene two weeks earlier, or even on the third day.

Reviewing our experiences, we began envisioning mobile job-site trailers outfitted with collection stabilizing gear already on board. Such units could operate for days at a given location providing local outreach and assistance to private as well as institutional collections. We recognized the need for standing agreements with funding agencies to support emergency recovery efforts. Cooperative relations between relevant national organizations (e.g., AASLH, AIC) could standardize the training and selection criteria for potential volunteers - conservators, museum professionals, life-safety personnel, and students enrolled in conservation training programs - to ensure teams are ready to roll into action with the first responders. Relevant national associations (e.g., American Association of Museums, American Library Association, Society of American Archivists) could take on supporting roles such as maintaining lists of members and non-members within each state to expedite the process of determining which institutions need condition assessment. Several appropriate contacts per institution should be listed, including home and cell phone numbers. Such organizations could coordinate onsite hosting of mobile conservation units, providing clearance to use vacant institutional parking lots.

According to Gerry Bell, lead meteorologist for NOAA's Atlantic Hurricane Seasonal Outlook, "warmer-than-normal sea-surface temperatures and low wind shear" are factors contributing to this season's "stronger and more numerous storms³." With 2005 on record as the most active hurricane season in recorded history, NOAA predicts we are now entering a 20-30 year cycle of increased tropical storm activity⁴. In combination with other types of natural and manmade disasters, this warning should provide ample incentive to begin formulating national and international response plans to harness the good will of knowledgeable practitioners to ensure irreplaceable cultural collections are not needlessly lost.

Gary Frost is an educator in book art and book conservation. He has taught at the School of the Art Institute of Chicago, Columbia University in New York and the University of Texas at Austin. He is currently the Conservator for the Libraries at the University of Iowa.

Randy Silverman is Preservation Librarian at University of Utah's Marriott Library. He has worked in the field of book conservation since 1978, holds a Masters degree in Library Science, and teaches as adjunct faculty for Emporia State University, University of Arizona, and University of North Texas.



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Air drying collections, Hancock County Historical Society, Bay St. Louis, Mississippi: 27 September 2005

3 National Oceanographic and Atmospheric Administration, "NOAA Raises the 2005 Atlantic hurricane season outlook: Bulk of this season's storms still to come," <<http://www.noaa.gov/stories2005/s2484.htm>> (7 November 2005).

4 National Oceanographic and Atmospheric Administration, "NOAA Raises the 2005 Atlantic hurricane season outlook."